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METHOD FOR SECURING DIRECT FIELD INOCULATIONS IN STUDIES OF CURLY-TOP DISEASE

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The technique 1/ here described makes possible a direct transfer of insects from the host to the test plant in studies to determine the percentage of viruliferous carriers. The method may be used in other studies, but it is adapted particularly for the use of small test plants where the source of insect population is distant from the laboratory.

Wallace and Murphy, 2/ in their studies of curly-top disease, made indirect transfers from wild host plants to beets because the flowerpots in which the beets were grown could not be conveniently transported to the field.

A direct transfer of insects from a wild host to beets or to a test plant in virus-disease studies is advantageous because it eliminates the possibility of modification or reduction of the virus content of the insects by their feeding on susceptible hosts used in transporting the leafhoppers to the laboratory. A high mortality often occurs when it is necessary to transfer the leafhoppers from one food plant to another.

The method described involves the use of trays of convenient size for transporting the test plants to the field so that the leafhoppers may be transferred directly from the host plant. The trays are about 5 inches deep and are divided into individual blocks about 2 inches square by stretching strings across the tray to mark off squares. The string conveniently separates the plants in an orderly arrangement so that individual inoculation records may be economically maintained. A single beet seed is planted in each

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1/ This technique was developed in cooperation with the Utah Agricultural Experiment Station.

2/ Wallace, J. M., and Murphy, A. M. Studies of the Epidemiology of Curly Top in Southern Idaho, with Special Reference to Sugar Beets and Weed Hosts of the Vector _Eutettix tenellus_. U. S. Dept. Agr. Tech. Bul. 624. 1938.

square. Occasionally it may be necessary to transplant a few plants to the squares where germination was not secured. A single beet leafhopper is placed in each clip cage, which is attached to the leaf of an individual beet plant. The leafhoppers are usually collected from the host plant by means of an insect net and transferred to a celluloid cylinder, from which individual specimens may be segregated, by the use of a small pipette, for placement in the clip cages. The trays can be returned to the greenhouse or any other optimum environment for the development of the disease. By simply screening the openings of the greenhouse, the chance of infection by extraneous viruliferous beet leafhoppers is minimized.

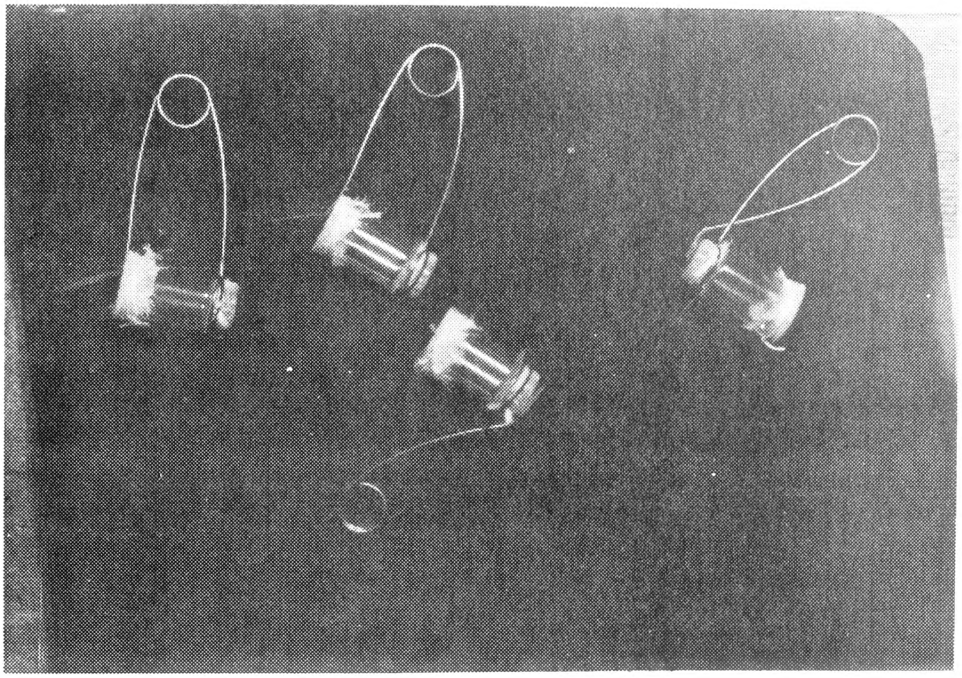

Figure 1.--Clip cages used to isolate individual leafhoppers on separate beet plants.

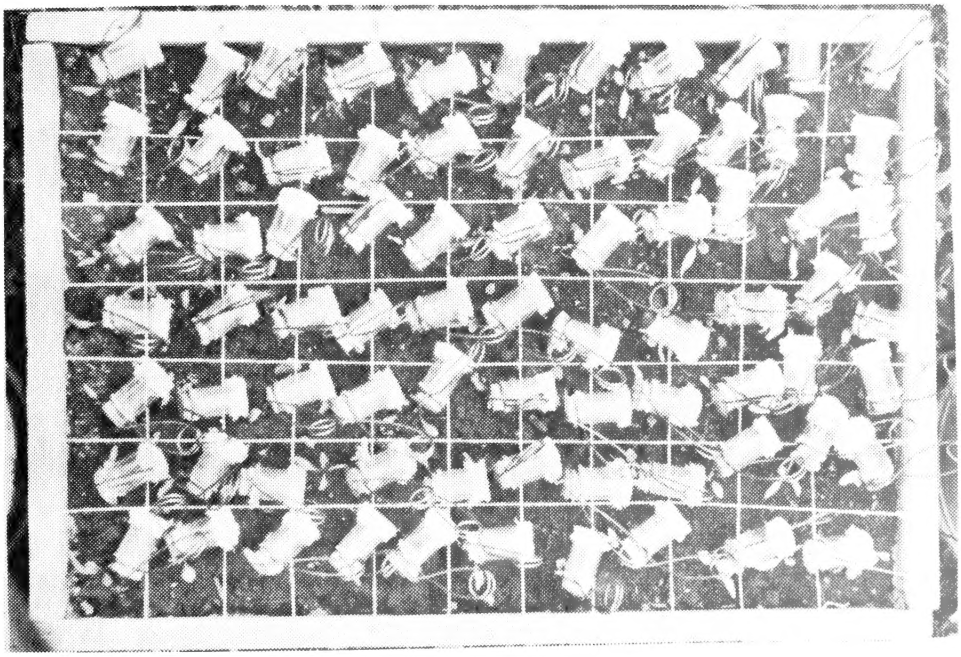

Figure 2.--Vertical view of a tray of small beets with the clip cages attached. String separates the tray into squares, and each square contains one beet plant.